

AMENDMENTS TO THE CLAIMS

Claims 1-25. (Withdrawn)

26. (Currently Amended) A method of forming a diode, comprising the steps of: forming an anode of a first conductivity type and a cathode of a second conductivity type disposed below said anode on a first region of a substrate, wherein at least one of said cathode and anode comprise a plurality of vertically abutting diffusion regions; and forming etching said substrate adjacent said first region to form a plurality of isolation regions, said cathode and anode being disposed between adjacent ones of said plurality of isolation regions, said plurality of isolation regions extending deeper into said substrate [[that]] than said cathode and said anode.
27. (Original) The method as recited in claim 26, wherein said isolation regions comprise a plurality of insulation-filled trenches having sidewalls that are substantially vertical.
28. (Original) The method as recited in claim 26, wherein said isolation regions comprise a plurality of insulation-filled trenches having sidewalls that are tapered.
29. (Original) The method as recited in claim 26, wherein said step of forming said cathode comprises:
forming a first doped region of a second conductivity type abutting said anode; and
forming a second doped region of said second conductivity type abutting and disposed below said first doped region and contacting said substrate, said first and second doped regions having different dopant concentrations.

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30. (Currently Amended) The method as recited in claim 29, further comprising the step of: forming a second pair of isolation structures disposed between said ~~ajacent~~ adjacent isolation regions and said anode.
31. (Original) The method as recited in claim 26, wherein said isolation regions are formed by a process comprising the steps of:
etching said substrate to form trenches;
depositing at least one insulator; and
removing portions of said insulator outside of said trenches.
32. (Currently Amended) The method as recited in claim 31, wherein said step of depositing comprises ~~a first formation of a liner and a deposition of~~ a fill material.
33. (Currently Amended) The method as recited in ~~claim 26~~ claim 29, wherein said step of forming said cathode further comprises the step of forming a third doped region disposed between said first doped region and said second doped region.
34. (Original) The method as recited in claim 33, wherein said third doped region comprises a retrograde-doped region.
35. (Original) The method as recited in claim 26, wherein said step of forming said anode comprises the steps of:
forming a first doped region abutting said cathode; and
forming a second doped region on a surface of said substrate, said second doped region having a higher concentration of dopant than said first doped region.

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36. (Original) The method as recited in claim 35, wherein said first doped region comprises a retrograde-doped region.
37. (Original) The method as recited in claim 35, further comprising the steps of:
forming a plurality of diffusion regions of said second conductivity type on a surface of said substrate.
38. (Currently Amended) The method as recited in claim 37, further comprising the step of: forming a plurality of second ~~isolation~~ isolation regions that separate said plurality of diffusion regions from said cathode.

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